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Title: Association between media use, acute stress disorder and psychological distress

Short title: Media use and distress

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To the Editor

Recent research has emphasised the impact of the media on stress and anxiety responses to disasters. In particular, 'media amplification' has been used to explain post-traumatic stress responses well away from the 'bulls-eye' of any event, with media exposure even more strongly associated with stress than direct exposure (1). More recently focus has turned to the influence of social media following mass trauma (2). Social media is seen as having a more direct, personal impact on risk assessment (3), with recent data suggesting greater amplification of anxiety by social rather than traditional media (4). Previous studies have not, however, directly compared the association between specific media sources and anxiety and distress, or their mediational role in the relationship between disaster exposure and distress. This may be important for clinicians interested in the impact of different media sources following a disaster.

We conducted an online panel survey in the Philippines three weeks following super-Typhoon Haiyan (week of 27.11.13), working with Asia Opinions, a survey company specialising in East Asia. All participants from which we drew our sample had access to the internet. The panel was created using random stratified sampling methods and included respondents from across the Philippines, using weights for key demographic elements (e.g. gender, region) that were compared with census information to create a reliable approximation of a representative sample. Procedures followed those established by the ICC/ESOMAR International Code on Market and Social Research (5). Of 1400 contacted 1001 completed the survey (50% female, Mean age 30.4 [SD 10.4]; response rate 71.5%). Our sample matched the 2010 Philippine census for sex distribution; consistent with the use of an internet panel and the focus on social media our respondents were younger than the general population (73% of respondents were under 36, versus 80% of the full Asia Opinions panel and 43% of the Philippine population). Respondents reported a) disaster related experiences (personal property loss, damage to home, witness injury, each scored 0 "no", 1 "yes") b) psychological distress (K6: 6-item item Likert scale screening for anxiety and mood disorders scale (6) (α =. 90) c) Acute

Stress Disorder (ASD) (sum of 16 criteria assessing A, B or D symptoms in DSM-5, yes/no for endorsement of ASD (7) (α = .94), d) media source used to gain information about Haiyan (TV, Radio, Newspaper, Facebook, Twitter, YouTube, each scored 0 “not used” or 1 “used”). As the study was co-ordinated from Israel approval was from the Ariel University School of Social Work Ethics committee.

168 participants (17%) scored ≥ 13 on K6, indicating possible severe mental illness; 249 (25%) displayed ASD symptoms. To test the mediating effect of different media usage on the association between exposure to the typhoon and ASD or psychological distress, we conducted two separate sets of hierarchical regressions, assessing associations with media type (traditional vs. social and the six individual media sources). For both analyses we entered demographics at step 1, exposure and media type used at step 2. This allowed us to test the unique contribution of each mediator [media types] to the total indirect relationship between exposure and ASD/psychological distress. In order to better approximate population parameters we employed a resampling technique (bootstrapping) for both analyses on 1,000 samples (8), while controlling for age, gender, and marital status. Multiple mediation analyses and bootstrapping were conducted using SPSS v21 and Hayes's multiple mediation module (8).

In the first regressions the media mediators were the number of traditional media sources (television, radio or newspaper) or social media sources (Facebook, Twitter, Youtube) used, with each media type entered separately into the analyses. Examination of the 95% bias-corrected confidence intervals revealed a significant mediating effect of the number of social media sources used on both the relationship between exposure and ASD and the relationship between exposure and psychological distress (Table 1). There was no such association for the number of traditional media sources used. The media mediators used in the second set of regressions were the individual

six individual media sources (TV, Radio, Newspaper, Facebook, Twitter and Youtube, each scored yes / no). Findings revealed a significant mediating effect for the use of Youtube on the association between exposure and ASD, and significant mediating effect for the use of Twitter on the association between exposure and psychological distress. For all analyses there was also a partial effect for the control variable of age (from B= -.03 p<.03 to B= -.10 p<.001), with distress and ASD symptoms lower amongst older respondents.

Recent evidence has pointed to emotional contagion in large social networks (9). In our study use of multiple social, but not traditional, media was significantly associated with both ASD and psychological distress following disaster. Social media therefore seem to offer considerable opportunity for emotional contagion of stress following trauma. Only Twitter and YouTube were significantly associated with (higher) ASD or K6, and only Twitter/YouTube mediated the relationship between disaster exposure and distress/ anxiety. Although social networks such as Facebook have been associated with the sharing of sentiment amongst established networks (9, Twitter and YouTube allow for a more public sharing of emotion, and may promote rumours associated with anxiety and distress (3). The use of an online panel may have helped us obtain our high response rate, and also permitted us to collect data shortly after the disaster. Similar high response rates have also been reported in other studies of Typhoon Haiyan (10). Limitations of this study include the use of cross-sectional design, the relatively young age of the sample, and self-reported evaluation of psychological symptoms. In particular, we are not able to ascertain whether it is anxiety itself that drives social media use.

Findings have significant implications for practitioners. Clinicians and therapists might do well to advise vulnerable clients about the potential deleterious impact of social media. While use of social

media has great potential following disaster (3), emergency responders should be aware of the use of such media, and its associations with distress and anxiety.

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Table 1: Unique contribution of media type on Acute Stress Disorder and Psychological Distress

	Acute Stress Disorder (DSM-5)		Psychological distress (K6)	
	Direct association with ASD (β, T)	Indirect (Mediational) relationship (β; 95%CI)	Direct association with K6 (β, T)	Indirect (Mediational) relationship (β; 95%CI)
Social media[a]	.10 (3.32)**	.20; 95%CI (0.06-0.39)*	.11 (3.57)**	.33; 95%CI (0.15-0.68)*
Traditional media[a]	.04 (1.24)	.05; 95%CI (-.04-0.16)	.00 (.08)	-.06; 95%CI (-.24-.07)
TV[b]	-.04 (-1.28)	-.00; 95%CI(-.06-.57)	-.05 (-1.56)	-.00; 95%CI(-.14-.09)
Radio	.05 (1.69)	.09; 95%CI(-.01-.04)	.03 (.88)	.06; 95%CI(-.12-.25)
Newspaper	.03 (.99)	.01; 95%CI(-.02-.09)	-.00 (-.15)	-.02; 95%CI(-.16-.02)
Facebook	.05 (1.70)	.01; 95%CI(-.02-.08)	.04 (1.15)	.02; 95%CI(-.02-.16)
Twitter	.09 (2.73)**	.11; 95%CI(-.00-.29)	.12 (3.88)**	.27; 95%CI(.10-.56)*
YouTube	.08 (2.45)*	.13; 95CI (0.02-0.30)*	.06 (2.06)*	.08; 95%CI(-.04-.28)

Notes: **p<.01, *p<.05.

DSM-5 - Diagnostic and Statistical Manual for Mental Disorders Fifth Edition. K6 – Kessler Psychological Distress Scale

The top half of Table 1 shows results from the first regressions, examining number of media types used. The lower half of Table 1 shows findings from the second regressions, which included all six media sources.

[a] Number of media sources (0-3)

[b] All single media scored 0 (no), 1 (yes).

[c] Each result with a value above 0 and a 95% CI range above 0 is considered a significant result.